Remarks/Arguments

Applicants thank Examiner Parekh for the careful examination of this application and for the clear explanation of the claim rejections. In response, applicants cancel claims 7-12 and insert new claims 13 and 14, which are fully supported in the specification and drawing figures. Regarding claims 1-6, applicants respectfully submit that the 103 rejections are improper because the references do not render the claims obvious. Detailed explanation follows:

Claim 1 stands rejected under 35 USC 103(a) as being unpatentable over the Moulton reference. The 103 rejection is improper, however, because the Moulton reference does not disclose all the limitations in claim 1.

Claim 1 describes packaged semiconductor device that comprises a carrier tape and a semiconductor. The carrier tape has the following limitations:

a. It is embossed;

b. It has a pocket; and

c. It has a protruding feature in the pocket.

The Moulton reference discloses an integrated circuit package with a removable shield, which, the Office action asserts, anticipates the carrier tape element in claim 1 of applicants' invention. The following are two passages from the Moulton reference describing the removable shield. Please note that all three limitations (a), (b), and (c) are missing from both passages:

The first passage describes the removable shield depicted in Figure 1:

> Removable shield 11 is fabricated from a sheet of spring steel which is approximately 0.127 mm thick. Spring steel material is used to ensure that the required shape is maintained despite bending during repeated use. Removable shield 11 is mounted on TAB carrier 12. A pair of edge fingers 18 are formed to grip the bottom of TAB carrier 12 and are supported by a pair of edge strips 16. Edge strips 16 are bent to form an acute angle 22, of approximately 82 degrees. A pair of slot fingers 17 are formed at the opposite end of removable shield 11. Slot fingers 17 are bent to form an acute angle 23 of approximately 87 degrees. Slot fingers 17 are formed to be of such size and shape as to fit a matching pair of slots 19. Slots 19 are fabricated as part of TAB carrier 12. The spacing between slot fingers 17 and edge strips 16 is fitted so that slot

> fingers 17 will grip the edges of slots 19 when edge strips 16 are positioned along an edge 24 of TAB carrier 12. Sufficient spring tension is provided between slot fingers 17 and edge strips 16 to hold removable shield 11 firmly in place on TAB carrier 12 by spring action alone. An opening 14 is made in the central area of removable shield 11. Opening 14 is of such size and shape as to allow a predetermined access to encapsulated integrated circuit die 15 without exposing leads 21.[1]

It is clear that the removable shield disclosed in the Moulton reference is made of a sheet of steel; it has two pairs of fingers bent from the sheet of steel; and it has an opening. This removable shield is not an embossed carrier tape; it does not have a pocket; and it does not have a protruding feature in the pocket.

The second passage from the Moulton reference describing the removable shield in a second embodiment:

> Removable shield 26 is fabricated from a sheet of spring steel which is approximately 0.127 mm thick. Spring steel material is used to ensure that the required shape is maintained despite slight bending during repeated use. Removable shield 26 is sized and shaped to closely fit TAB carrier 12. A top shield 33, an edge support 31 and a bottom shield 29 form a U shaped section which serves to protect both top and bottom of encapsulated integrated circuit die 15 and leads 21. Top shield 33 and bottom shield 29 are supported such that the open end is spaced more closely than the spacing of edge support 31. This provides a spring action which serves to grip TAB carrier 12 under pressure holding removable shield 26 in place. A plurality of dimples 27 are formed near one end of top shield 33 and bottom shield 29 which mate with depressions 37 in TAB carrier 12. Dimples 27 together with depressions 37 serve to hold removable shield 26 in a desired position on TAB carrier 12. When removable shield 26 is mounted or removed, edge support 31 slides along edge 38. Likewise, an edge finger 28 along the end of lower shield 29 slides along edge 41 of TAB carrier 12 preventing undesired lateral movement by removable shield 26. A locating cutout 32 is formed to match locating indent 39 which together serve to align both removable shield 26 and TAB carrier 12 in a desired orientation. A top opening 34 is made in the central area of top shield 33. A bottom opening 36 is made in the central area of bottom shield 29. Top opening 34 and bottom opening 36 are of such size and shape as to allow a predetermined access to encapsulated integrated circuit die 15 without exposing leads 21.[2]

It is clear that this removable shield disclosed in the Moulton reference is also made of a sheet of steel; the finger feature in the first embodiment is extended to a U-shape feature to shield both the top and the bottom of the integrated circuit in a TAB form. But like the removable shield in the first embodiment, this removable shield is also not an embossed carrier tape; it also does not have a pocket; and it does not have a protruding feature in the pocket.

---

[1] US 5,371,408, col. 2, ll.2-26.

[2] ID., col. 2, l. 59 – col. 3, l. 22.

The dimples feature in the Moulton reference does not cure the deficiency that the removable shield is not an embossed carrier tape; that it does not have a pocket; and that there is no protruding feature from a pocket to interlock a device. Because the Moulton reference fails to disclose these limitations, it can not be said to render claim 1 obvious. Since the Office action fails to establish prima facie obviousness, applicants respectfully submit, the 103 rejection against claim 1 is improper.

Claims 2-6 depend directly on patentable claim 1 with additional limitations. In particular, claim 3 further comprises a pedestal in the pocket for seating the protruding feature; claims 4 and 5 further limit the dimension of the indentation; and claim 6 further comprises a pattern of corresponding indentations and protruding features. These features are not disclosed in the Moulton reference.

In summary, claim 1 stands patentable over the Moulton reference because it fails at least to disclose the limitations on the carrier tape. Claims 2-6 stand patentable by virtue of their depending on patentable claim 1 and because they have additional limitations not disclosed in the reference.

Applicants also insert new claims 13 and 14. These claims are fully supported by the original specification and the original drawing features. Applicants respectfully request further examination of this application and timely allowance of the pending claims.

Respectfully submitted,

Yingsheng Tung
Attorney for Applicants
Reg. No. 52,305

Texas Instruments Incorporated
P. O. Box 655474 MS 3999
Dallas, TX 75265
(972)917-5355